

SCAFFOLD AND ACCESS BRACE FOR SAME

invented by

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### TECHNICAL FIELD OF THE INVENTION

5        [0001]        The present invention relates to the field of construction structures. More specifically, the present invention relates to scaffolds, scaffold braces, and the ready access to scaffold platforms.

### BACKGROUND OF THE INVENTION

10        [0002]        Scaffolds are utilized to support platforms thus enabling workers to perform tasks at elevated levels. Scaffolds are formed of vertical posts connected across the width of the scaffold by horizontally disposed bearers. The vertical posts may also be connected across the length of the scaffold by horizontally disposed runners, and may be cross  
15        connected together by laterally extending scaffold supports. The vertical posts are typically equipped with screw jacks which can be operated to adjust the elevation of the posts.

20        [0003]        Section 1926.451(g) of the Occupational Safety and Health Administration (OSHA) Regulations for Construction requires fall protection for employees on scaffolds that are more than ten feet above a lower level. Specific to the present invention, employees are to be protected by a guardrail system surrounding the platform of a scaffold.

25        [0004]        FIG. 1 shows a perspective view of an exemplary prior art scaffold 20. As shown, scaffold 20 is formed from a frame arrangement 24 that includes a first bearer 26 extending between a first pair of vertical posts 28, and a second bearer 30 extending between a second pair of vertical posts 32.  
30        Scaffold 20 further includes a platform 34 supported by first and second bearers 26 and 30, respectively. In this exemplary scenario, platform 34 is represented by a single plank or

aluminum element having end hooks 36 that engage with first and second bearers 26 and 30, respectively. Only one plank of platform 34 is shown for simplicity of illustration. However, it should be apparent to those skilled in the art that platform 34 may be formed from several planks to fill the width of scaffold 20. Scaffold 20 further includes additional frame elements, cross bracing, base plates, various fasteners, and so forth known to those skilled in the art.

[0005] A guardrail system 38 surrounds all open sides of platform 34 as specified under the Code of Federal Regulations, Title 29 (29CFR), Section 1926.451(g) Safety and Health Regulations for Construction. Guardrail system 38 generally includes top rails 40 and midrails 42. Posts (i.e., upright supports 44) support top rails 40 and midrails 42. In order to access platform 34 of scaffold 20 with guardrail system 38, a user may climb a ladder 46 resting against scaffold 20. The user then crawls through or over top rails 40 and/or midrails 42. Such a situation creates a fall hazard for the user who is attempting to climb over or through the rails.

[0006] Under 29CFR, Section 1926.34(a), exits in every building or structure shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. Guardrail systems surrounding a scaffold platform directly violate this section of the OSHA Regulations for Construction. However, free and unobstructed egress from a scaffold platform is considered a manufacturers defect, and is presently considered acceptable. Nevertheless, it is still the employer's responsibility to protect employees from potential fall hazards.

**SUMMARY OF THE INVENTION**

[0007] Accordingly, it is an advantage of the present invention that an access brace is provided for a scaffold that enables the use of a guardrail system.

5 [0008] It is another advantage of the present invention that an access brace is provided that forms an opening in the guardrail system through which a user can readily access a scaffold platform while not violating OSHA regulations for construction.

10 [0009] Yet another advantage of the present invention is that an access brace is provided that is easily engaged with an existing scaffold and an existing guardrail system for the scaffold.

[0010] The above and other advantages of the present invention are carried out in one form by an access brace for a scaffold. The scaffold includes a pair of bearers, a platform supported by the pair of bearers, and a guardrail system for surrounding the platform. The access brace includes an elongate member having a first end and a second end. First  
15 engaging means is coupled to the first end, and second engaging means is coupled to the second end. The first and second engaging means are configured to engage with the pair of bearers. A post extends from an intermediate portion of the elongate member, the post being configured to couple with an  
20 upright support of the guardrail system.

[0011] The above and other advantages of the present invention are carried out in another form by a scaffold that comprises a frame arrangement including a first bearer extending between a first pair of vertical posts, and a second  
25 bearer extending between a second pair of vertical posts. A platform is supported by the first and second bearers. The scaffold further comprises an access brace including an  
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elongate member having a first end and a second end, a first  
end hook coupled to the first end and engaged with the first  
bearer, a second end hook coupled to the second end and engaged  
with the second bearer, and a post extending from an  
5 intermediate portion of the elongate member, the post being  
located a predetermined distance from the first end. A  
guardrail system surrounds the platform. The guardrail system  
includes an upright support coupled with the post. The  
predetermined distance defines an opening in the guardrail  
10 system for access to the platform.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0012] A more complete understanding of the present  
invention may be derived by referring to the detailed  
15 description and claims when considered in connection with the  
Figures, wherein like reference numbers refer to similar items  
throughout the Figures, and:

[0013] FIG. 1 shows a perspective view of an exemplary  
prior art scaffold;

20 [0014] FIG. 2 shows a perspective front view of an  
access brace for a scaffold in accordance with a preferred  
embodiment of the present invention;

[0015] FIG. 3 shows an enlarged perspective rear view of  
a portion of the access brace of FIG. 2;

25 [0016] FIG. 4 shows a partial front view of a scaffold  
that has been configured to include the access brace of FIG. 2;  
and

[0017] FIG. 5 shows a partial perspective view of  
another scaffold that includes the access brace of FIG. 2.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

[0018] Referring to FIGs. 2-3, FIG. 2 shows a perspective front view of an access brace 48 for a scaffold in accordance with a preferred embodiment of the present invention. FIG. 3 shows an enlarged perspective rear view of a portion of access brace 48. Access brace 48 serves to form an opening in a guardrail system of a scaffold through which a user can readily access a scaffold platform, such as platform 34 (FIG. 1) while not violating Occupational Safety and Health Administration (OSHA) Regulations for Construction. Access brace 48 may be easily engaged with an existing scaffold, such as scaffold 20 (FIG. 1), and an existing guardrail system for the scaffold. Alternatively, access brace 48 may be an integral component of a scaffold system. Access brace 48 is described herein in connection with scaffold 20 for clarity of illustration. However, access brace 48 may be readily utilized with other types of scaffolding.

[0019] Access brace 48 includes a first elongate member 50 and a second elongate member 52 arranged substantially parallel to first elongate member 50. Supports 54 extend between first and second elongate members 50 and 52, respectively, for retaining first and second elongate members 50 and 52 in spaced relation. A first post 56 and a second post 58 extend vertically from an intermediate portion 60 of first elongate member 50. Generally, supports 54 are arranged substantially perpendicular to first and second elongate members 50 and 52, respectively, and two of supports 54 are aligned with a corresponding one of first and second posts 56 and 58. It should be apparent to those skilled in the art that supports 54 need not necessarily be vertical, but may instead be diagonal components.

[0020] First elongate member 50 is characterized by a first end 62 and a second end 64. First engaging means, in the form of a first end hook 66, is coupled to first end 62. Similarly, second engaging means, in the form of a second end hook 68, is coupled to second end 64. In a preferred embodiment, first and second end hooks 66 and 68, respectively, are L-brackets, each having a leg portion 70 welded to one of first and second ends 62 and 64. A body 72 of each of first and second end hooks 66 and 68, respectively, includes an arched cutout region 74. Arched cutout region 74 is configured to engage with one of first and second bearers, 26 and 30, respectively (FIG. 1), which will be discussed in greater detail below.

[0021] In a preferred embodiment of the present invention, access brace 48 includes first and second end hooks 66 and 68, respectively, as described above. First and second end hooks 66 and 68 advantageously allow the engagement of access brace 48 to first and second bearers 26 and 30 without the need for additional components such as, bolts and toggle pins. However, it should be apparent to those skilled in the art that different fasteners than the described end hooks may be utilized to engage access brace 48 with first and second bearers 26 and 30, respectively.

[0022] Second elongate member 52 is characterized by a third end 76 and a fourth end 78. A first bracket 80 is coupled to third end 76 of second elongate member 52. Likewise, a second bracket 82 is coupled to fourth end 78 of second elongate member 52. In a preferred embodiment, each of first and second brackets 80 and 82 includes a U-shaped member 84 characterized by a first leg 86 and a second leg 88 interconnected by an arcuate portion 90. In an exemplary embodiment, first leg 86 is coupled by welding to one of third

and fourth ends 76 and 78, respectively. A pin, such as a toggle pin 92, is directed through apertures 94 in each of first and second legs 86 and 88, respectively. First and second brackets 80 and 82, respectively, are configured for attachment to separate ones of vertical posts 28 and 30 (FIG. 1) of scaffold 20 (FIG. 1), which will be discussed in greater detail below.

[0023] In a preferred embodiment of the present invention, access brace 48 includes first and second brackets 80 and 82, respectively, as described above. First and second brackets 80 and 82 are structurally robust and easily installed. The use of toggle pins 92 eliminates the need for installation tools to mount access brace 48 on scaffold 20, and prevents the need for any physical modifications to scaffold 20 that might otherwise compromise the structural integrity of scaffold 20. However, it should be apparent to those skilled in the art that different fasteners than the described toggle pins 92 may alternatively be utilized to couple first and second brackets 80 and 82, respectively, to corresponding vertical posts 28 and 32.

[0024] First post 56 is located a first distance 96 from first end 62 of first elongate member 50, and second post 58 is located a second distance 98 from first end 62 of first elongate member 50. In an exemplary embodiment, first distance 96 may be approximately nineteen inches from first end 62. Second distance 98 is greater than first distance 90. For example, with first distance 96 being approximately nineteen inches, second distance 98 may be approximately thirty-eight inches. The desired first and second distances 96 and 98, respectively, will be discussed in greater detail below.

[0025] Access brace 48 may be largely manufactured from conventionally utilized one and three quarter inch steel



tubing, with the exception being first and second posts 56 and 58, respectively, which may have an outer diameter 100 of one and three eighths inch. The desired outer diameter 100 of first and second posts 56 and 58, respectively, will be  
5 discussed in greater detail below.

[0026] FIG. 4 shows a partial front view of scaffold 20 that has been configured to include access brace 48. First and second end hooks 66 and 68, respectively, engage with first and second bearers 26 and 30, respectively. In particular, body 72  
10 (FIG. 3) of first and second end hooks 66 and 68 seats over a corresponding one of first and second bearers 26 and 30. Thus, the corresponding one of first and second bearers 26 and 30, respectively, is positioned in arched cutout region 74 (FIG. 3) of body 72.

[0027] In addition, first bracket 80 couples to one of vertical posts 28, while second bracket 82 couples to one of vertical posts 32. In particular, arcuate portion 90 (FIG. 3) of first and second brackets 80 and 82, respectively, abuts a front side 102 of vertical posts 28 and 32. Thus, first and  
20 second brackets 80 and 82, respectively, largely surround the ones of vertical posts 28 and 32. Separate toggle pins 92 (FIG. 3) are subsequently directed through apertures 94 (FIG. 3) of each of first and second brackets 80 and 82 so that first and second brackets are secured to corresponding vertical posts  
25 28 and 32, respectively.

[0028] Access brace 48 largely fits between vertical posts 28 and 32 of scaffold 20, and provides additional structural support for scaffold 20. As shown, when access brace 48 is coupled to scaffold 20, first and second posts 56  
30 and 58, respectively, extend vertically upward from access brace 48. First and second posts 56 and 58, respectively, may be selectively utilized for attachment of one of upright

supports 44, i.e., a first upright support 44', of guardrail system 38.

5       [0029]       In the embodiment illustrated in FIG. 4, upright supports 44 are desirably tubular members exhibiting an inner diameter 104. In a preferred embodiment, first and second posts 56 and 58 exhibit outer diameter 100 (FIG. 2) that is smaller than inner diameter 104. Accordingly, second post 58 fits within the tubular structure of first upright support 44'.

10       [0030]       Second distance 98 between second post 58 and first end 62 of first elongate member 50 defines an opening 106 in guardrail system 38 for access to platform 34. A user of scaffold 20 can access platform 34 by climbing ladder 46 and stepping onto platform 34, without first climbing over or through top rails 40 and/or midrails 42. As mentioned above, 15 second distance 98 is approximately thirty-eight inches. As shown, a width of ladder 46 fills approximately one half of second distance 98, thereby establishing an effective opening in guardrail system 38 of approximately nineteen inches. This effective opening advantageously enables a user ready access to 20 platform 34. In addition, this effective opening may be further utilized as an access opening when hoisting operations are taking place.

25       [0031]       The effective opening complies with 29CFR Section 1926.502(b)(2)(iv) which specifies that no openings in the guardrail system are to be more than nineteen inches wide. Although not shown, an optional barrier, such as a chain, gate, or removable guardrail section, may be placed across opening 106 that is readily latched and unlatched by a user who is boarding or getting off of platform 34.

30       [0032]       FIG. 5 shows a partial perspective view of another scaffold 108 that includes access brace 48. Access brace 48 advantageously enables a break in the guardrail system

in two potential places by utilizing one of first and second posts 56 and 58 depending upon which type of ladder and scaffolding system being used. Scaffold 108 is provided to illustrate this feature of access brace 48.

5        [0033]       Scaffold 108 is formed from a frame arrangement 110 that includes a first bearer 112 extending between a first pair of vertical posts 114, a second bearer 116 extending between a second pair of vertical posts 118, and a platform 120 supported by first and second bearers 112 and 116,  
10       respectively. Platform 120 is largely surrounded by a guardrail system 122 that includes top rails 124, midrails 126, and upright supports 128. Scaffold 108 further includes an integral access ladder 130 coupled to one of vertical posts 114 and extending from a side 132 of scaffold 108.

15       [0034]       Access brace 48 couples to scaffold 108 in a similar manner to that which was described in connection with FIG. 4. Accordingly, access brace 48 largely fits between vertical posts 114 and 118 of scaffold 108, and provides additional structural support for scaffold 108. In this  
20       exemplary scenario, first post 56 is selectively utilized for attachment of one of upright supports 128, i.e., a first upright support 128', of guardrail system 122.

      [0035]       First distance 96 between first post 56 and first end 62 of first elongate member 50 defines an opening 134 in  
25       guardrail system 122 along a front 136 of scaffold 108 for access to platform 120. Thus, opening 134 is oriented at an approximate right angle relative to access ladder 130. Like scaffold 20 (FIG. 4), a user of scaffold 108 can readily access platform 120 by climbing access ladder 130 and stepping onto  
30       platform 120, without first climbing over or through top rails 124 and/or midrails 126, respectively. As mentioned above, first distance 96 is approximately nineteen inches. Since

access ladder 130 does not fill part of opening 134, the attachment of first upright support 128' of guardrail system 122 to first post 56 enables compliance with 29CFR Section 1926.502(b)(2)(iv) which specifies that no openings in the guardrail system are to be more than nineteen inches wide.

[0036] In summary, the present invention teaches of an access brace for a scaffold. The end hooks and brackets of the access brace enables easy and secure engagement with an existing scaffold and an existing guardrail system.

Utilization of the access brace enables an opening to be formed through the guardrail system of a scaffold. This opening enables a user to readily access a scaffold platform while complying with OSHA regulations for construction. Furthermore, the two posts of the access brace enables a break in the guardrail system in two potential places depending upon which type of ladder and scaffolding system is used.

[0037] Although the preferred embodiments of the invention have been illustrated and described in detail, it will be readily apparent to those skilled in the art that various modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.